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Plant communities and landforms delineate soil complexes

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Researchers collecting soil pedons with USDA-NRCS soil scientists to increase the available information for sandy outwash soils, which are abundant as public forest land due to the low fertility of the soils. Photo by Robert Richard.

Whole-tree harvesting has the potential to remove more nutrients than a traditional harvest and is restricted for sandy outwash soils in Wisconsin. Currently, 100,500 ha of glaciofluvial soil complexes have conflicting regulation status in the state. This means that whole-tree harvesting is allowed on one soil but not the other, and the land manager is unable to locate the individual soil components.

In a new *Soil Science Society of America Journal* article, researchers used machine learning to create thresholds from the National Cooperative Soil Survey database to delineate the soils collected in the field and to provide land managers with models to identify the soil bodies within the soil complexes.

Habitat type best delineated the soils. However, since habitat typing requires field collection and is not possible during the winter months, relative elevation can be used to estimate the location of the soils, and the habitat type can be collected when possible.

Given the need to inform forest management through soil data, the researchers demonstrated that publicly available soil databases are a valuable resource. Land managers can now field-identify the soils based on the soil characteristics and ability to sustain whole-tree harvests.

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Richard, R.P., Kane, E.S., Bronson, D.R., Maclean, A.L., & Kolka, R.K. (2021). Plant communities and landform relationships delineate components of soil complexes subject to whole-tree harvest restriction. *Soil Science Society of America Journal*. **https://doi.org/10.1002/saj2.20234** (in press)

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